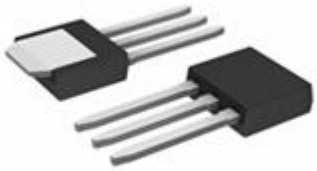
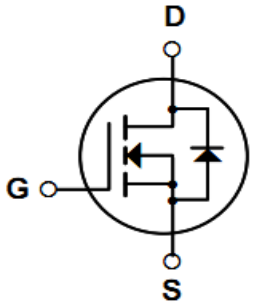
## Description

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

## Features

1) $V_{DS}$=150V,$I_D$=12A,$R_{DS(ON)}$<160mΩ @$V_{GS}$=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.






## Ratings $T_C$=25℃,unless otherwise noted

| Symbol | Parameter | Ratings | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | 150 | V |
| $V_{GS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$ | Continuous Drain Current- | 12 | A |
| | Continuous Drain Current-$T_C$=100℃ | --- | |
| | Pulsed Drain Current[1] | 50 | |
| $E_{AS}$ | Single Pulse Avalanche Energy | --- | mJ |
| $P_D$ | Power Dissipation | 55 | W |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55 to +175 | ℃ |

## Thermal Characteristics

| Symbol | Parameter | Ratings | Units |
|---|---|---|---|
| $R_{\theta JC}$ | Thermal Resistance,Junction to Case[2] | 5 | ℃/W |
| $R_{\theta JA}$ | Thermal Resistance,Junction to Ambient | - | |

## Package Marking and Ordering Information

| Part NO. | Marking | Package |
|---|---|---|
| RYN150B2C | RYN150B2C | TO-251 |

## Electrical Characteristics $T_C$=25℃ unless otherwise noted

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $BV_{DSS}$ | Drain-Sourtce Breakdown Voltage | $V_{GS}$=0V, $I_D$=250μA | 150 | - | - | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{GS}$=0V, $V_{DS}$=150V | - | - | 1 | μA |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$=±20V, $V_{DS}$=0A | - | - | ±100 | nA |
| **On Characteristics**[3] | | | | | | |
| $V_{GS(th)}$ | GATE-Source Threshold Voltage | $V_{GS}$=$V_{DS}$, $I_D$=250μA | 1.5 | 2 | 2.5 | V |
| $R_{DS(ON)}$ | Drain-Source On Resistance | $V_{GS}$=10V,$I_D$=5A | - | 130 | 160 | mΩ |
| | | $V_{GS}$=4.5V,$I_D$= | - | - | - | |
| $G_{FS}$ | Forward Transconductance | $V_{DS}$=15V, $I_D$=10A | - | 15 | - | S |
| **Dynamic Characteristics**[4] | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=25V, $V_{GS}$=0V, f=1MHz | - | 900 | - | pF |
| $C_{oss}$ | Output Capacitance | | - | 115 | - | |
| $C_{rss}$ | Reverse Transfer Capacitance | | - | 70 | - | |
| **Switching Characteristics**[4] | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DS}$=75V, $I_D$=1A, $V_{GS}$=10V,$R_{GEN}$=6Ω | - | 8 | - | ns |
| $t_r$ | Rise Time | | - | 10 | - | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | - | 20 | - | ns |
| $t_f$ | Fall Time | | - | 15 | - | ns |
| $Q_g$ | Total Gate Charge | $V_{GS}$=10V, $V_{DS}$=75V, $I_D$=1.5A | - | 19 | - | nC |
| $Q_{gs}$ | Gate-Source Charge | | - | 5.5 | - | nC |
| $Q_{gd}$ | Gate-Drain “Miller” Charge | | - | 7 | - | nC |
| **Drain-Source Diode Characteristics** | | | | | | |
| $V_{SD}$ | Source-Drain Diode Forward Voltage[3] | $V_{GS}$=0V,$I_S$=2A | - | - | 1.2 | V |
| $t_{rr}$ | Reverse Recovery Time | $I_F$=9.6A,di/dt=100A/μS | - | - | - | ns |
| $Q_{rr}$ | Reverse Recovery Charge | | - | - | - | nC |

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤10 sec.
3. Pulse Test: Pulse Width ≤300μs, Duty Cycle ≤2%.
4. Guaranteed by design, not subject to product

## Typical Characteristics $T_J$=25℃ unless otherwise noted

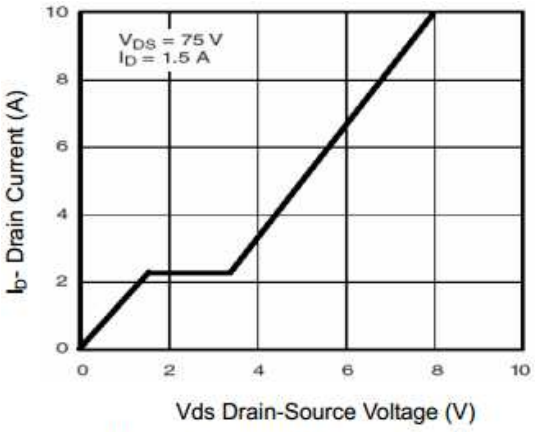



**Figure 1 Output Characteristics**

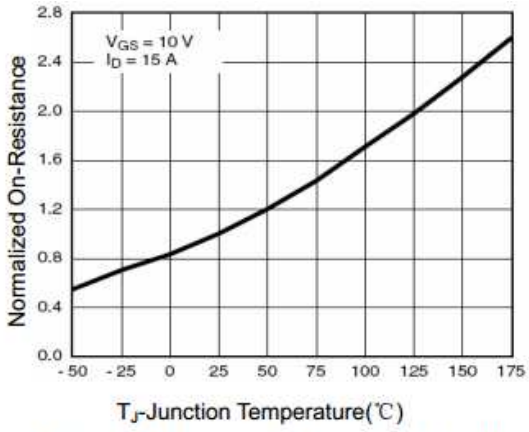



**Figure 4 Rdson- Junction Temperature**

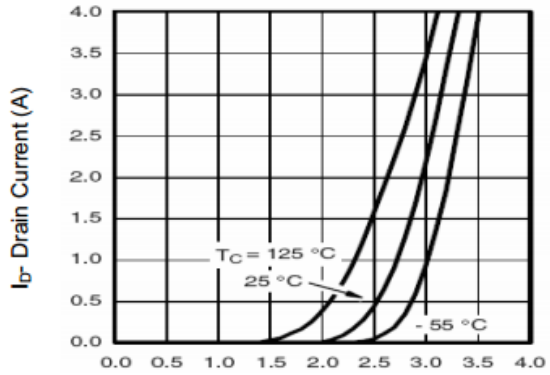



**Figure 2 Transfer Characteristics**

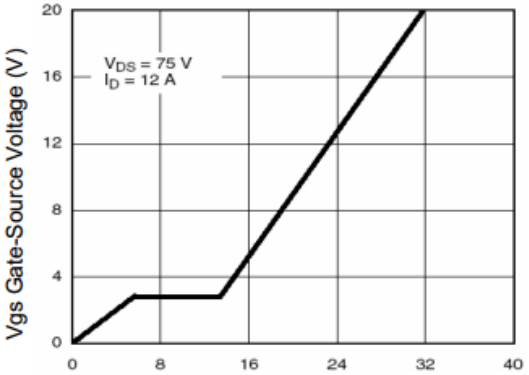



**Figure 5 Gate Charge**

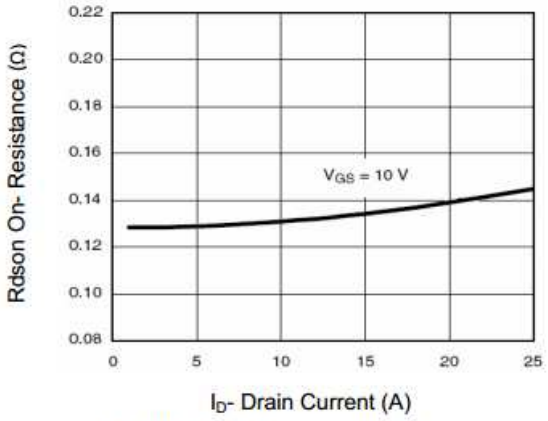



**Figure 3 Rdson- Drain Current**

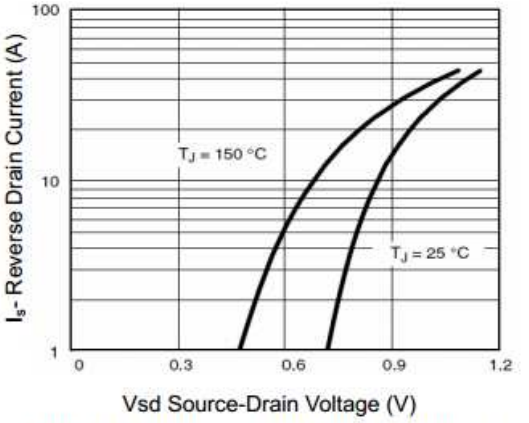



**Figure 6 Source- Drain Diode Forward**